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ABSTRACT

The National Standard Reference Data System (NSRDS) coordinates on a national scale the compilation and dissemination of reference data in the physical sciences. The primary aim of the program, which involves the efforts of many groups in universities, government laboratories, and private industry, is to provide compilations of critically evaluated physical and chemical property data. Evaluated databases of physical and chemical properties of substances are available in printed form, on magnetic tapes, and through online computer networks. This document provides a comprehensive list of the products available from the NSRDS for the years 1964-1984. Following an introduction, the document includes the following sections: Journal of Physical and Chemical Reference Data (Reprints, Supplements, Reprint Packages); Other NSRDS Data Publications; Critical Bibliographies and Indexes (the National Bureau of Standards Series and other publishers); Computer Programs for Handling Technical Data; and the NBS (National Bureau of Standards) Magnetic Tape Series. Indexes to authors, properties, and material classes are given, as well as information on ordering publications and current prices. (THC)

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The National Bureau of Standards[1] was established by an act of Congress on March 3, 1901. The Bureau's overall goal is to strengthen and advance the nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau's technical work is performed by the National Measurement Laboratory, the National Engineering Laboratory, the Institute for Computer Sciences and Technology, and the Institute for Materials Science and Engineering.

The National Measurement Laboratory

Provides the national system of physical and chemical measurement; coordinates the system with measurement systems of other nations and furnishes essential services leading to accurate and uniform physical and chemical measurement throughout the Nation's scientific community, industry, and commerce; provides advisory and research services to other Government agencies; conducts physical and chemical research; develops, produces, and distributes Standard Reference Materials; and provides calibration services. The Laboratory consists of the following centers:

- Basic Standards[2]
- Radiation Research
- Chemical Physics
- Analytical Chemistry

The National Engineering Laboratory

Provides technology and technical services to the public and private sectors to address national needs and to solve national problems; conducts research in engineering and applied science in support of these efforts; builds and maintains competence in the necessary disciplines required to carry out this research and technical service; develops engineering data and measurement capabilities; provides engineering measurement traceability services; develops test methods and proposes engineering standards and code changes; develops and proposes new engineering practices; and develops and improves mechanisms to transfer results of its research to the ultimate user. The Laboratory consists of the following centers:

- Applied Mathematics
- Electronics and Electrical Engineering[2]
- Manufacturing Engineering
- Building Technology
- Fire Research
- Chemical Engineering[2]

The Institute for Computer Sciences and Technology

Conducts research and provides scientific and technical services to aid Federal agencies in the selection, acquisition, application, and use of computer technology to improve effectiveness and economy in Government operations in accordance with Public Law 89-306 (40 U.S.C. 759), relevant Executive Orders, and other directives; carries out this mission by managing the Federal Information Processing Standards Program, developing Federal ADP standards guidelines, and managing Federal participation in ADP voluntary standardization activities; provides scientific and technological advisory services and assistance to Federal agencies; and provides the technical foundation for computer-related policies of the Federal Government. The Institute consists of the following centers:

- Programming Science and Technology
- Computer Systems Engineering

The Institute for Materials Science and Engineering

Conducts research and provides measurements, data, standards, reference materials, quantitative understanding and other technical information fundamental to the processing, structure, properties and performance of materials; addresses the scientific basis for new advanced materials technologies; plans research around cross-country scientific themes such as nondestructive evaluation and phase diagram development; oversees Bureau-wide technical programs in nuclear reactor radiation research and nondestructive evaluation; and broadly disseminates generic technical information resulting from its programs. The Institute consists of the following Divisions:

- Ceramics
- Fracture and Deformation[3]
- Polymers
- Metallurgy
- Reactor Radiation

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[1] Headquarters and Laboratories at Gaithersburg, MD, unless otherwise noted; mailing address Gaithersburg, MD 20899.

[2] Some divisions within the center are located at Boulder, CO 80303.

[3] Located at Boulder, CO, with some elements at Gaithersburg, MD.

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Foreword

The National Standard Reference Data System was established in 1963 for the purpose of promoting the critical evaluation and dissemination of numerical data of the physical sciences. The program is coordinated by the Office of Standard Reference Data of the National Bureau of Standards but involves the efforts of many groups in universities, government laboratories, and private industry. The primary aim of the program is to provide compilations of critically evaluated physical and chemical property data. These tables are published in the Journal of Physical and Chemical Reference Data, in the NSRDS-NBS series of the National Bureau of Standards, and through other appropriate channels. Other outputs of the program include bibliographies, computer programs for handling data, and databases in magnetic tape format.

This listing includes all publications which have appeared since establishment of this program in 1964. Indexes to authors, properties, and material classes are given, as well as information on ordering publications.

David R. Lide, Director
Office of Standard Reference Data

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Standard Reference Data Publications 1964 - 1984

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The National Bureau of Standards' Office of Standard Reference Data manages a network of data centers that prepare evaluated data bases of physical and chemical properties of substances. Data bases are available in printed form, on magnetic tapes and through on-line computer networks. This document provides a comprehensive list of the products available from the National Standard Reference Data System (NSRDS) for the years 1964-1984, including indexes qualified by author, material, and property terms. Ordering information and current prices can be found at the end of this document.

Key words: bibliographies; chemical properties; evaluated data; indexes; materials properties; physical properties; publication list.

1. Introduction

The National Standard Reference Data System (NSRDS), established in 1963, coordinates on a national scale the compilation and dissemination of reference data in the physical sciences. Under the Standard Reference Data Act (Public Law 90-396) the National Bureau of Standards (NBS) of the U.S. Department of Commerce has the primary responsibility in the Federal Government for providing reliable scientific and technical data. The Office of Standard Reference Data at NBS coordinates a complex of data evaluation centers, located in university, industrial, and other Government laboratories as well as within NBS. These centers compile and critically evaluate numerical physical and chemical property data retrieved from the world's scientific literature.

This publications list includes NSRDS data compilations, critical reviews, and other publications which are available from various sources. Indexes by author, property, and materials class are included. Prices and ordering instructions for publications listed are given in this document and further information may be obtained from:

Office of Standard Reference Data
National Bureau of Standards
Gaithersburg, MD 20899

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Journal of Physical and Chemical Reference Data

Reprints

1

Gaseous Diffusion Coefficients — T. R. Marrero and E. A. Mason. J Phys Chem Ref Data 1, 1(1972).

2

Selected Values of Critical Supersaturation for Nucleation of Liquids from the Vapor — G. M. Pound. J Phys Chem Ref Data 1, 119(1972).

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Selected Values of Evaporation and Condensation Coefficients for Simple Substances — G. M. Pound. J Phys Chem Ref Data 1, 135(1972).

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Atlas of the Observed Absorption Spectrum of Carbon Monoxide between 1060 and 1900 Å — S. G. Tilford and J. D. Simmons. J Phys Chem Ref Data 1, 147(1972).

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Tables of Molecular Vibrational Frequencies, Part 5 — Takehiko Shimanouchi. J Phys Chem Ref Data 1, 189(1972).

6

Selected Values of Heats of Combustion and Heats of Formation of Organic Compounds Containing the Elements C, H, N, O, P, and S — Eugene S. Domalski. J Phys Chem Ref Data 1, 221(1972).

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Thermal Conductivity of the Elements — Cho Y. Ho, Robert W. Powell, and Peter E. Liley. J Phys Chem Ref Data 1, 279(1972).

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The Spectrum of Molecular Oxygen — Paul H. Krupenie. J Phys Chem Ref Data 1, 423(1972).

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A Critical Review of the Gas-Phase Reaction Kinetics of the Hydroxyl Radical — William E. Wilson, Jr. J Phys Chem Ref Data 1, 535(1972).

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Molten Salts: Volume 3, Nitrates, Nitrites, and Mixtures. Electrical Conductance, Density, Viscosity, and Surface Tension Data — George J. Janz, Ursula Krebs, H. F. Siegenthaler, and Reginald P. T. Tomkins. J Phys Chem Ref Data 1, 581(1972).

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High Temperature Properties and Decomposition of Inorganic Salts, Part 3. Nitrates and Nitrites — Kurt H. Stern. J Phys Chem Ref Data 1, 747(1972).

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High-Pressure Calibration: A Critical Review — D. L. Decker, W. A. Bassett, Leo Merrill, H. T. Hall, and J. D. Barnett. J Phys Chem Ref Data 1, 773(1972).

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The Surface Tension of Pure Liquid Compounds — Joseph J. Jasper. J Phys Chem Ref Data 1, 841(1972).

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Microwave Spectra of Molecules of Astrophysical Interest, I. Formaldehyde, Formamide, and Thioformaldehyde — Donald R. Johnson, Frank J. Lovas, and William H. Kirchhoff. J Phys Chem Ref Data 1, 1011(1972).

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Osmotic Coefficients and Mean Activity Coefficients of Uni-Univalent Electrolytes in Water at 25 °C — Walter J. Hamer and Yung-Chi Wu. J Phys Chem Ref Data 1, 1047(1972).

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The Viscosity and Thermal Conductivity Coefficients of Gaseous and Liquid Fluorine — Howard J. M. Hanley and R. Prydz. J Phys Chem Ref Data 1, 1101(1972).

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Analysis of Specific Heat Data in the Critical Region of Magnetic Solids — F. J. Cook. J Phys Chem Ref Data 2, 11(1973).

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Evaluated Chemical Kinetic Rate Constants for Various Gas Phase Reactions — Keith Schofield. J Phys Chem Ref Data 2, 25(1973).

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Atomic Transition Probabilities for Forbidden Lines of the Iron Group Elements (A Critical Data Compilation for Selected Lines) — Melvin W. Smith and Wolfgang L. Wiese. J Phys Chem Ref Data 2, 85(1973).

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Tables of Molecular Vibrational Frequencies, Part 6 — Takehiko Shimanouchi. J Phys Chem Ref Data 2, 121(1973).

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Compilation of Energy Band Gaps in Elemental and Binary Compound Semiconductors and Insulators — W. H. Strehlow and E. L. Cook. J Phys Chem Ref Data 2, 163(1973).

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Microwave Spectra of Molecules of Astrophysical Interest, III. Methanol — R. M. Lees, Frank J. Lovas, William H. Kirchhoff, and Donald R. Johnson. J Phys Chem Ref Data 2, 205(1973).

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Energy Levels of Neutral Helium (^{4}He I) — William C. Martin. J Phys Chem Ref Data 2, 257(1973).

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The Calculated Thermodynamic Properties of Superfluid Helium-4 — James S. Brooks and Russell J. Donnelly. J Phys Chem Ref Data 6, 51(1977).

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Energy Levels of Chromium, Cr I through Cr XXIV — Jack Sugar and Charles H. Corliss. J Phys Chem Ref Data 6, 317(1977).

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The Activity and Osmotic Coefficients of Aqueous Calcium Chloride at 298.15 K — Bert R. Staples and Ralph L. Nuttall. J Phys Chem Ref Data 6, 385(1977).

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The Viscosity and Thermal Conductivity Coefficients for Dense Gaseous and Liquid Methane — Howard J. M. Hanley, W. M. Haynes, and Robert D. McCarty. J Phys Chem Ref Data 6, 597(1977).

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NMR Spectral Data: A Compilation of Aromatic Proton Chemical Shifts in Mono- and Di-Substituted Benzene — B. L. Shapiro and L. E. Mohrmann. J Phys Chem Ref Data 6, 919(1977).

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Effects of Isotopic Composition, Temperature, Pressure, and Dissolved Gases on the Density of Liquid Water — George S. Kell. J Phys Chem Ref Data 6, 1109(1977).

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Erratum: Viscosity of Water Substance - New International Formulation and Its Background — A. Nagashima. J Phys Chem Ref Data 12, 403p. (1983).

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A Correlation of the Existing Viscosity and Thermal Conductivity Data of Gaseous and Liquid Ethane — Howard J. M. Hanley, K. E. Gubbins, and S. Murad. J Phys Chem Ref Data 6, 1167(1977).

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Elastic Properties of Zinc: A Compilation and a Review — Hassell M. Ledbetter. J Phys Chem Ref Data 6, 1181(1977).

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Behavior of the AB-Type Compounds at High Pressures and High Temperatures — Leo Merrill. J Phys Chem Ref Data 6, 1205(1977).

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Energy Levels of Manganese, Mn I through Mn XXV — Charles H. Corliss and Jack Sugar. J Phys Chem Ref Data 6, 1253(1977).

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Tables of Atomic Spectral Lines for the 10 000 Å to 40 000 Å Region — Michael Outred. J Phys Chem Ref Data 7, 1(1978).

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Evaluated Activity and Osmotic Coefficients for Aqueous Solutions The Alkaline Earth Metal Halides — Robert Goldberg and Ralph L. Nuttall. J Phys Chem Ref Data 7, 263(1978).

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Ideal Gas Thermodynamic Properties of Methanoic and Ethanoic Acids — Jing Chao and Bruno J. Zwolinski. J Phys Chem Ref Data 7, 363(1978).

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Critical Review of Hydrolysis of Organic Compounds in Water Under Environmental Conditions — W. Mabey and T. Mill. J Phys Chem Ref Data 7, 383(1978).

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See: Energy bands of solids

Band spectra

See: Electronic molecular spectra

Binding energy

See: Atomic energy levels and spectra
Bond dissociation energy

Boiling point

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Bulk modulus

See: Elastic constants

Cell constants

See: Lattice constants

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See: Thermodynamic properties
Heat of combustion

Compressibility factor

See: Equation of state

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See: Electrical conductance

Conductivity, electrical

See: Electrical resistivity

Conductivity, thermal

See: Thermal conductivity

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See: Charge exchange cross section
Electron collision cross section
Photon cross section
Rayleigh scattering cross section

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See: Electric dipole moment of molecules

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See: Energy bands of solids
Semiconductor properties

Energy levels

See: Atomic energy levels and spectra
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See: Bond Dissociation energy
Bond dissociation energy
Electron affinity

Energy, dissociation

See: Bond dissociation energy
Thermodynamic properties

Enthalpy

See: Thermodynamic properties

Enthalpy of formation

See: Heat of formation
Thermodynamic properties

Entropy

See: Thermodynamic properties

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See: Electrical conductance

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See: Atomic energy levels and spectra

F-values

See: Transition probabilities for atoms and molecules

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Formation, heat of

See: Heat of formation
Thermodynamic properties

Franck-Condon factor

See: Transition probabilities for atoms and molecules

Free energy

See: Thermodynamic properties

Frequencies, vibrational

See: Vibrational frequencies of molecules

Fundamental physical constants

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G-Factor

See: Magnetic moments of molecules

Gaseous diffusion coefficient

See: Diffusion coefficient

Gibbs energy

See: Thermodynamic properties

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Line strengths

See: Transition probabilities for atoms and molecules

Line widths

See: Spectral line widths

Loss tangent

See: Dielectric constant

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See: Electronic molecular spectra

Oscillator strengths

See: Transition probabilities for atoms and molecules

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See: Equation of state

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See: Electrical resistivity

Rotational constants

See: Molecular energy levels and constants

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Specific conductance

See: Electrical conductance

Specific gravity

See: Density

Specific heat

See: Heat capacity
Thermodynamic properties

Spectra

See: Atomic energy levels and spectra
Rotational spectra
Vibrational spectra (infrared, Raman)

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See: Crystal structure

Structure, molecular

See: Molecular structure

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See: Thermal conductivity

Thermal expansion coefficient

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3(11)	...	1985	NTIS	IN PRESS
4(I)	153	1966	NTIS	AD 634145, A08
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6	56	1967	NTIS	Out of print, superseded by NSRDS-NBS 39
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30	27	1969	NTIS	NSRDS-NBS 30, A03
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35(I)	358	1971	NTIS	SN 003-003-00949-1, COM 72-50282, A16; Reprints and updates parts of NBS Circular 467, VolumeI
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40	261	1972	NTIS	COM 72-50439, A12; reprint of NBS Technical Note 36
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43(Suppl.)	53	1975	NTIS	COM 75-10737/AS
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63(Suppl. 2)	1110	1983	NTIS	PB 84-156 496, A26
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94	116	1965	NTIS	N65-32001, A06
115	54	1970	NTIS	PB 192 874, A04
134	177	1973	NTIS	COM 73-50582, A09
153	123	1976	NTIS	PB 256 586, A06
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424	177	1976	NTIS	PB 251 845, A09
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270(3)	264	1968	NTIS	NBS TN 270(3), A12. Superseded by J. Phys. Chem. Ref. Data 11, Supplement 2 (1982)
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270(5)	49	1971	NTIS	COM 71-50171 A03. Superseded by J. Phys. Chem. Ref. Data 11, Supplement 2 (1982)
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983	103	1978	NTIS	PB 287 013, A06; supplements J. Phys. Chem. Reference Data 5(3)581-821(1976), Reprint No. 84
1039	83	1981	NTIS	PB 81-214 165, A05
1045	164	1981	NTIS	SN003-003-02351-5, PB 82-107673, A08
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81-2253	38	1981	NTIS	PB 83-249 789, A03
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81-2345	89	1981	NTIS	PB 82-184 904, A05
81-2356	17	1982	NTIS	PB 82-171 091, A02
82-2401	164	1982	NTIS	PB 82-259373, A08
81-2426	87	1982	NTIS	PB 83-216358, A05
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11. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)*

The National Bureau of Standards' Office of Standard Reference Data manages a network of data centers that prepare evaluated data bases of physical and chemical properties of substances. Data bases are available in printed form, on magnetic tapes and through on-line computer networks. This document provides a comprehensive list of the products available from the National Standard Reference Data System (NSRDS) for the years 1964-1984, including indexes qualified by author, material, and property terms. Ordering information and current prices can be found at the end of this document.

12. KEY WORDS *(Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)*

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Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NBS, NBS annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

Applied Mathematics Series—Mathematical tables, manuals, and studies of special interest to physicists, engineers, chemists, biologists, mathematicians, computer programmers, and others engaged in scientific and technical work.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NBS under the authority of the National Standard Data Act (Public Law 90-396).
NOTE: The Journal of Physical and Chemical Reference Data (JPCRD) is published quarterly for NBS by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements are available from ACS, 1155 Sixteenth St., NW, Washington, DC 20056.

Building Science Series—Disseminates technical information developed at the Bureau on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NBS under the sponsorship of other government agencies.

Voluntary Product Standards—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NBS administers this program as a supplement to the activities of the private sector standardizing organizations.

Consumer Information Series—Practical information, based on NBS research and experience, covering areas of interest to the consumer. Easily understandable language and illustrations provide useful background knowledge for shopping in today's technological marketplace.
Order the **above** *NBS publications from: Superintendent of Documents, Government Printing Office, Washington, DC 20402.*
Order the **following** *NBS publications—FIPS and NBSIR's—from the National Technical Information Service, Springfield, VA 22161.*

Federal Information Processing Standards Publications (FIPS PUB)—Publications in this series collectively constitute the Federal Information Processing Standards Register. The Register serves as the official source of information in the Federal Government regarding standards issued by NBS pursuant to the Federal Property and Administrative Services Act of 1949 as amended, Public Law 89-306 (79 Stat. 1127), and as implemented by Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 CFR (Code of Federal Regulations).

NBS Interagency Reports (NBSIR)—A special series of interim or final reports on work performed by NBS for outside sponsors (both government and non-government). In general, initial distribution is handled by the sponsor; public distribution is by the National Technical Information Service, Springfield, VA 22161, in paper copy or microfiche form.